

SIMULTANEOUS SMALLPOX AND B.C.G. VACCINATION IN INDONESIA

Nyoman Kumara Rai*

Vaksinasi cacar dan BCG mulai diberikan secara simultan di Jawa dan Bali pada bulan April 1972 vaksinasi cacar diberikan pada lengan kiri dan BCG pada lengan kanan. Secara berangsur-angsur program ini kemudian diperluas ke daerah luar Jawa-Bali, sehingga pada akhir tahun 1973 sudah mencakup seluruh Indonesia. Tenaga yang digunakan adalah para juru cacar yang sudah ada dalam rangka proyek penbasnisan penyakit cacar yang dimulai tahun 1968, dan terdapat hampir disemua kecamatan diseluruh Indonesia. Ide untuk menggabungkan kedua jenis vaksinasi ini yang kebetulan mempunyai target sam (anak2 0 - 14 thn) timbul setelah penderita cacar tidak dilaporkan lagi dibulan September 1971 (ternyata kemudian letusan cacar terakhir adalah dibulan Desember 1971). Sampai saat itu vaksinasi BCG dilakukan oleh petugas Puskesmas secara bertahap tenaga part timer. Ternyata target tidak pernah tercapai hal ini mungkin disebabkan oleh terbatasnya waktu yang tersedia untuk melakukan vaksinasi BCG sehingga para tenaga part timer tsb. hanya mampu mencakup daerah disekitar Puskesmas dan sekolah dasar. Sebelumnya telah diadakan dua trial; yang pertama diadakan di Bandung untuk melihat ad tidaknya saling pengaruh mempengaruhi antara kedua jenis vaksin cacar dan BCG bila diberikan pada saat yang bersamaan, sedangkan trial kedua dilakukan untuk menilai kemampuan juru cacar dalam melaksanakan vaksinasi BCG serta kesukaran2 yang dijumpai dilapangan (masing2 didua kabupaten di Jawa Tengah, Timur dan Yogyakarta). Disamping keuntungan yang diperoleh dari penggabungan kedua jenis vaksinasi ini yakni penghematan tenaga, biaya dan waktu, dijumpai juga beberapa kesukaran antara lain pengumpulan anak2, supply vaksin BCG yang tidak teratur dll. Walaupun demikian, di Jawa dan Bali hasil vaksinasi BCG antara April 1972 sampai dengan April 1973 menunjukkan kenaikan out-put lebih dari 4 kali lipat bila dibandingkan dengan out-put sebelum penggabungan, meskipun out-put prin vaksinasi cacar mempunyai tendensi menurun. Disini hanya akan dibahas pelaksanaan vaksinasi cacar dan BCG secara simultan di Jawa dan Bali, mengingat pelaksanaannya yang sudah memasuki tahun kedua.

The simultaneous smallpox and BCG vaccination was first launched in April 1972 in Jawa-Bali islands (excluding Jakarta). Smallpox vaccine was given on the left upper arm using a bifurcated needle, while at the same time BCG was applied on the right upper arm using the conventional BCG syringe. These vaccinations were performed by the already available smallpox vaccinator, nearly in every sub-district throughout Indonesia in conjunction with the Smallpox Eradication Program started in 1968. Previously BCG was given by a Health Centre staff, which due to the work load, could only cover its vicinity, and sweeping performed by a special team. Prior to this, two trials had been conducted. The first one was conducted

by Rivai et.al in 1971 in West Jawa, to assess the efficacy of both vaccines being administered simultaneously, while the second one in January 1972 (Central and East Jawa, Yogyakarta) to assess the capability of the smallpox vaccinators in performing BCG vaccination and difficulties encountered in the field. Both trials were considered satisfactory. In April 1973, the program was extended throughout Indonesia gradually so that by the end of 1973 all provinces could be covered.

This paper deals only with the program in Jawa and Bali islands (population approximately 8 millions), where the implementation has reached its second year.

MATERIALS AND METHODS

The smallpox vaccine is the freeze dried one produced by Bio Farma, with a potency of at least 10^8 pocks forming unit per ml, while BC

* Directorate General for Communicable Disease Control, Ministry of Health Jakarta.

vaccine is Japanese made donated by Unicef containing 5 mg BCG per 10 cc or 2.5 mg per 5 cc. Bifurcated needle was used for smallpox vaccination and BCG syringe for BCG vaccination on the left and right upper arm respectively. The simultaneous smallpox and BCG vaccinations were performed by 2.402 smallpox vaccinators stationed in the sub-districts. The target was to vaccinate the 0 - 1 yr group (primary vaccination for smallpox) and the 12 - 13 yrs group (revaccination for smallpox). For BCG, these two age groups valid only for the primary vaccinees. Previously, the target was 0 - 14 yrs for both vaccinations. Routine smallpox vaccination in 1970 (Koswara) was considered only as supplement to the eradication of smallpox, after it was proved that surveillance-containment measures alone could lead smallpox incidence to zero in September 1971. Further, research in other countries revealed that immunity conferred after successful primary vaccination is far beyond 5 years; 10 years is probably the most agreeable figure, while after revaccination is almost certainly extending to 20 yrs or more (Henderson, 1971). Therefore smallpox vaccination given twice during one's life would not hamper the eradication of smallpox. (primary vaccination in the 0 - 1 yr group and revaccination in the 12 - 13 yrs instead of every three years). From BCG vaccination point of view, those two age groups mentioned above are the most susceptible ones to contract tuberculosis. In each sub-district in Jawa and Bali, each smallpox vaccinator had to move around his area within a certain period (a cycle), so that by that period he would arrive at the place where he started. Each cycle was further divided into a primary and revaccination cycle. Vaccinations were done at several collecting points depending on the number of population served.

RESULTS

The results of smallpox and BCG vaccination from 1969 to 1972 are given below :

Year (Pelita)	Smallpox vaccination (in million)		B.C.G. vaccination (in million)
	P.V.	R.V.	P.V.
1969	3.5	19.3	0.5
1970	2.6	16.9	1.1
1971	2.8	11.6	2.4
1972	2.5	4.6	10.3

P.V. = primary vaccination
R.V. = revaccination

DISCUSSION AND CONCLUSION

The simultaneous smallpox and BCG vaccination came into being after the following considerations : The workload of smallpox vaccinators after the change of the target was reduced considerably, thereby addition of another antigen would be reasonable; The target of smallpox and BCG vaccination was the same (0 - 1 yr and 12 - 13 yrs); The out-put of the smallpox vaccinators in performing BCG could be higher as compared to the previous BCG vaccinators, owing to the increased number of working days and a more generous ability to travel through their areas; Time, money and manpower saving. Among the difficulties encountered were : Collecting children to be vaccinated, Irregular supply of BCG vaccine by Unicef, Storage of BCG vaccine where ice was a problem (BCG can be stored for 2 weeks only outside the refrigerator). Despite these difficulties the result is encouraging. As can be seen from the above table, BCG out-put in 1972 is 10.3 millions while the figure for 1971 is only 2.4 millions. This means a 4.3 fold increase of out-put. Smallpox vaccination itself has a tendency to decrease in out-put especially in primary vaccination. this may well be due to the difficulty encountered in doing a house to house vaccination, as BCG does not permit to do so.

SUMMARY

A simultaneous smallpox and BCG vaccination in Indonesia (with emphasis in Jawa and Bali) has been reviewed. It started in April 1972, using smallpox vaccinators (2.402) already available in Jawa-Bali in conjunction with the

smallpox eradication program. During the first year of its implementation, encouraging results were observed where the BCG out-put was 4.3 times higher than the output of the previous year. Based on this observation the programme was extended throughout Indonesia in April 1973. Care was taken to overcome the difficulties encountered, in order to achieve successful results.

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REFERENCES

- Henderson, D.A. (1971), Smallpox, W.H.O publication WHO/SE/71.28
- Henderson, D.A. (1971), Immunological principles in relation to immunization programmes. A paper published in Epidemiological Bulletin, Directorate General CDC, Ministry of Health, 2nd Quarter 1971
- Koswara, P.A. (1970) Is routine vaccination a necessity in a smallpox eradication programme? A paper published in the Inter Regional Seminar on Surveillance and Assessment on Smallpox Eradication, 1970
- Rivai A., et.al (1971) Simultaneous BCG and Smallpox vaccination on newborn infants. A paper published by the Department of Child Health, Medical School, University of Pajajaran, Bandung, Indonesia.